Observation Preparation

Review of SSS Readiness for EVLA Shared Risk Observing, June 5, 2009

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Atacama Large Millimeter/submillimeter Array
Expanded Very Large Array
Robert C. Byrd Green Bank Telescope
Very Long Baseline Array

NRAO

Introduction

This presentation:

- Define some terms
- Schematic of applications and data stores
- Screen captures from applications
- Brief demonstration

Terminology - Model

Source

Object on the celestial sphere.

Resource

A hardware configuration.

Hardware

Telescope electronics and back end instrumentation.

Project

Collection of related observations performed on a single telescope. Spawned from a proposal. A proposal could lead to several projects (usually one per telescope).

Program Block

A subdivision of project. One block for each configuration of a telescope.

Scheduling Block

A subdivision of program block. A continuous chunk of observing time. A program block might be split into multiple scheduling blocks if the desired amount of observing time cannot be performed all at once.

Scan

A subdivision of a scheduling block. The application of a resource to a source with specified intentions for a specified time.

Terminology - Applications

SCT

Source Catalog Tool. Browser-based application for maintaining catalogs of sources. Contains NRAO and user catalogs.

RCT

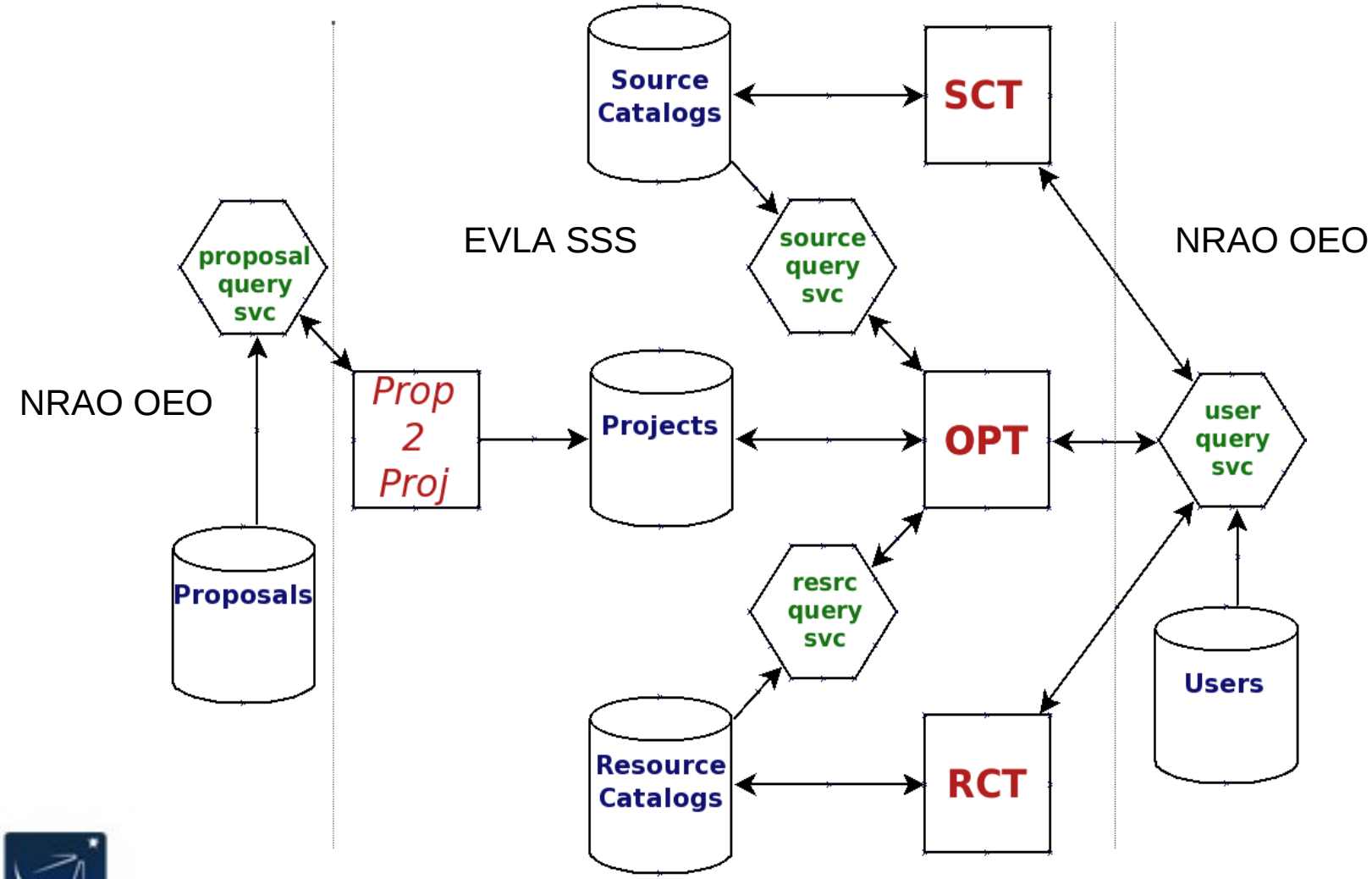
Resource Catalog Tool. Browser-based application for maintaining catalogs of hardware configurations. Contains NRAO and user catalogs.

OPT

Observation Preparation Tool. Browser-based application for configuring observations to be scheduled on a telescope.

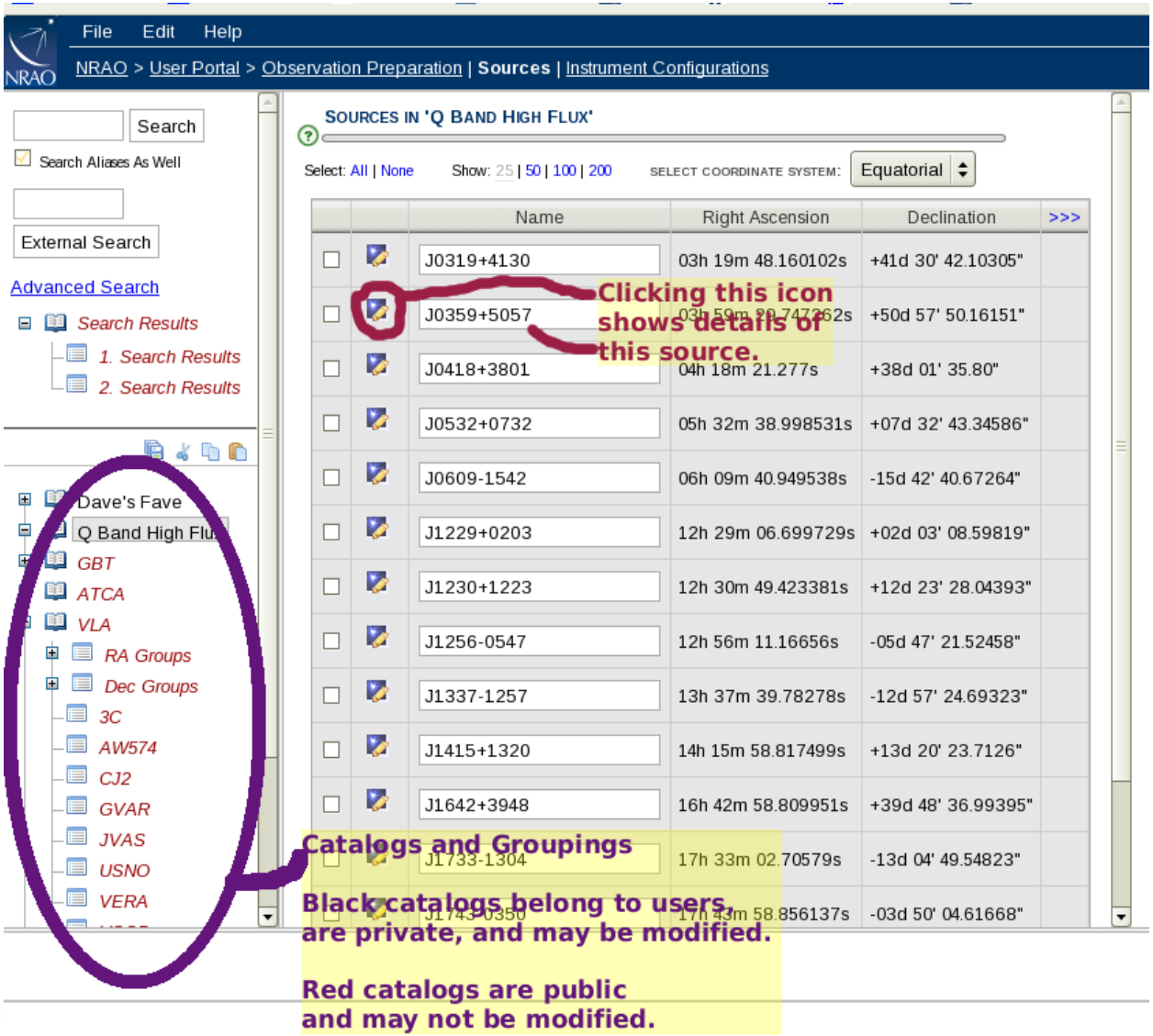
The term "OPT" is sometimes used to refer to the specific application that allows users to set up a project, while at other times is used to refer to the combined OPT / SCT / RCT suite of related applications. When using this latter meaning, this presentation will use the term "OPT+".

Applications & Data Stores



Source Catalog Tool

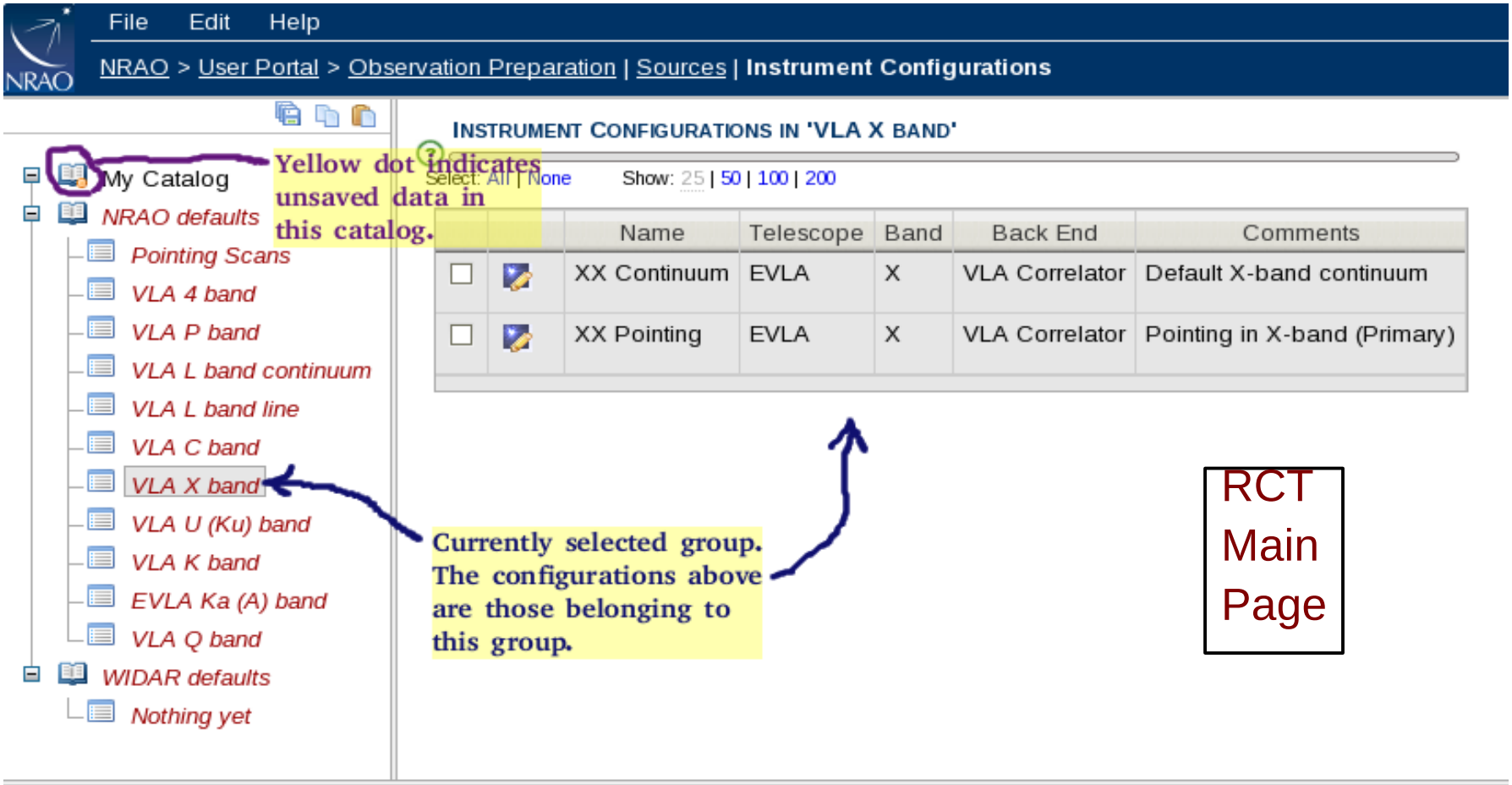
- Used for both observatory and personal catalogs.
  - Users have read-only access to observatory catalogs.
  - Users have no access to other users' catalogs.
- Supports text file import / export
  - Formats: XML, PST, (some work done on GBT formats)
  - Allows users to backup, share catalogs.
- Little changed since mid-2008
- Future features:
  - Ability to call up flux density history
  - Connection to archive for images
  - Graphical displays

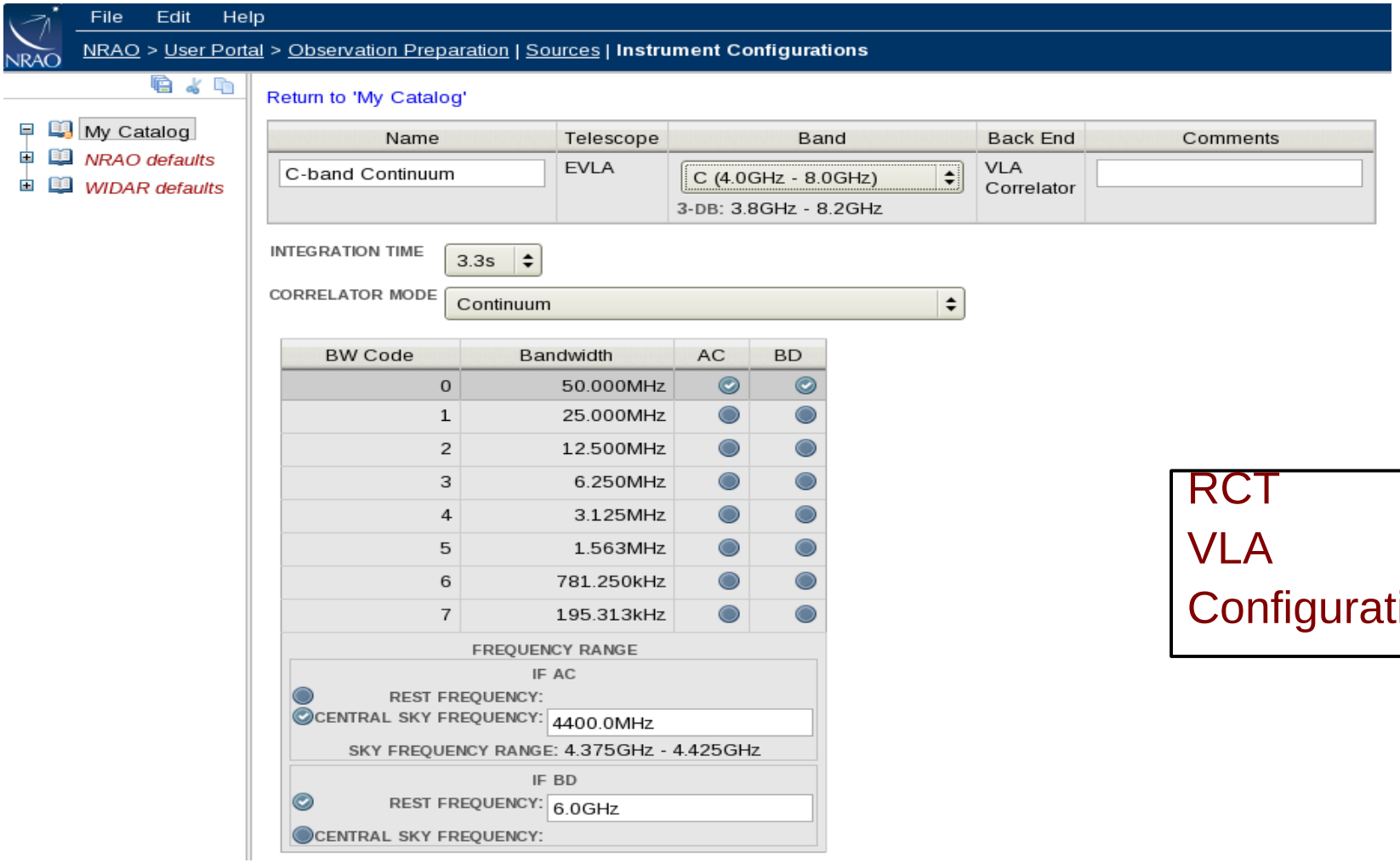


SCT Main Page

Resource Catalog Tool

- Original intent: support only WIDAR
  - Agreed to support VLA correlator for Ka band
    - Has been used for real science
- All future work will be to support WIDAR
  - Starting with user interface for experts
    - Experts can fine tune, but will not get much guidance
  - For OSRO we will have preconfigured standard setups
    - Users will be able to customize tuning, but little else
- Ultimate plan for non-experts: allow observer to enter science-oriented criteria and have software auto-configure WIDAR
  - Users can choose to adjust configuration


File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
My Catalog
NRAO defaults
Pointing Scans
VLA 4 band
VLA P band
VLA L band continuum
VLA L band line
VLA C band
VLA X band
VLA U (Ku) band
VLA K band
EVLA Ka (A) band
VLA Q band
WIDAR defaults
Nothing yet
Yellow dot indicates unsaved data in this catalog.
INSTRUMENT CONFIGURATIONS IN 'VLA X BAND'
Select: All | None
Show: 25 | 50 | 100 | 200
Name
Telescope
Band
Back End
Comments
XX Continuum
EVLA
X
VLA Correlator
Default X-band continuum
XX Pointing
EVLA
X
VLA Correlator
Pointing in X-band (Primary)
Currently selected group. The configurations above are those belonging to this group.
RCT Main Page



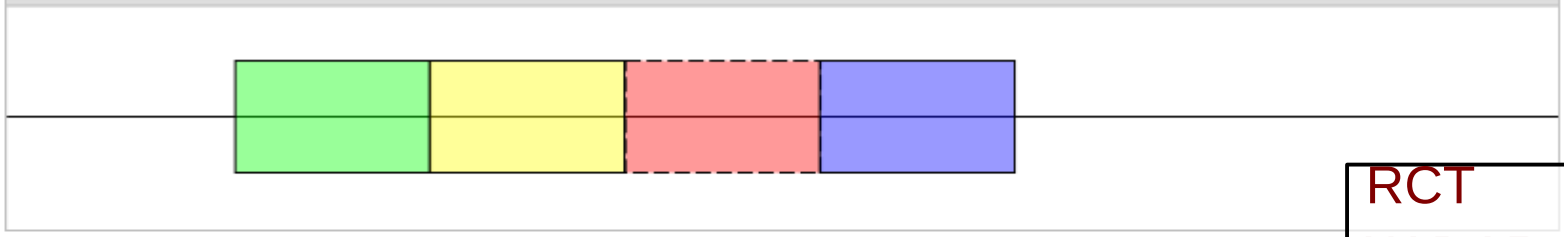
RCT
VLA
Configuration

Return to 'My Catalog'

Name	Telescope	Band	Back End	Comments
WIDAR Ka	EVLA	Ka (26.5GHz - 40.0GHz) 1-DB: 26.0GHz - 40.0GHz 3-DB: 25.0GHz - 41.0GHz	WIDAR	

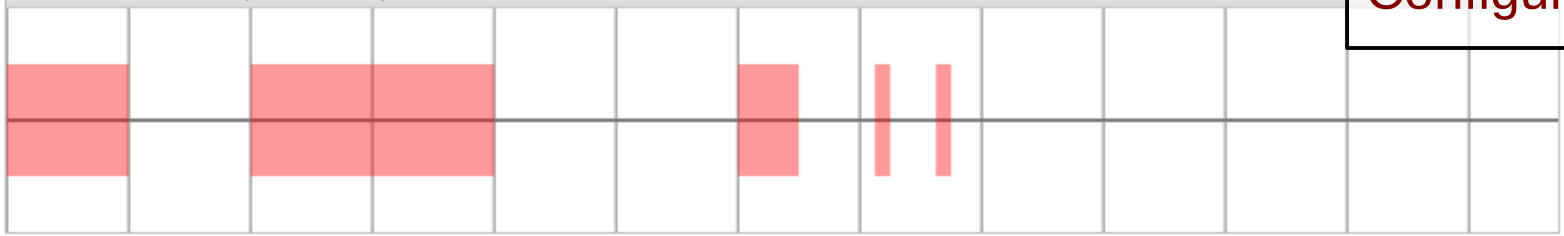
Graphical View | Basic Spectral Line Setup | Advanced Antenna Controls | **Adv. Correlator Config**

Receiver Band:



Frequency:28080MHz

Baseband: A1/C1

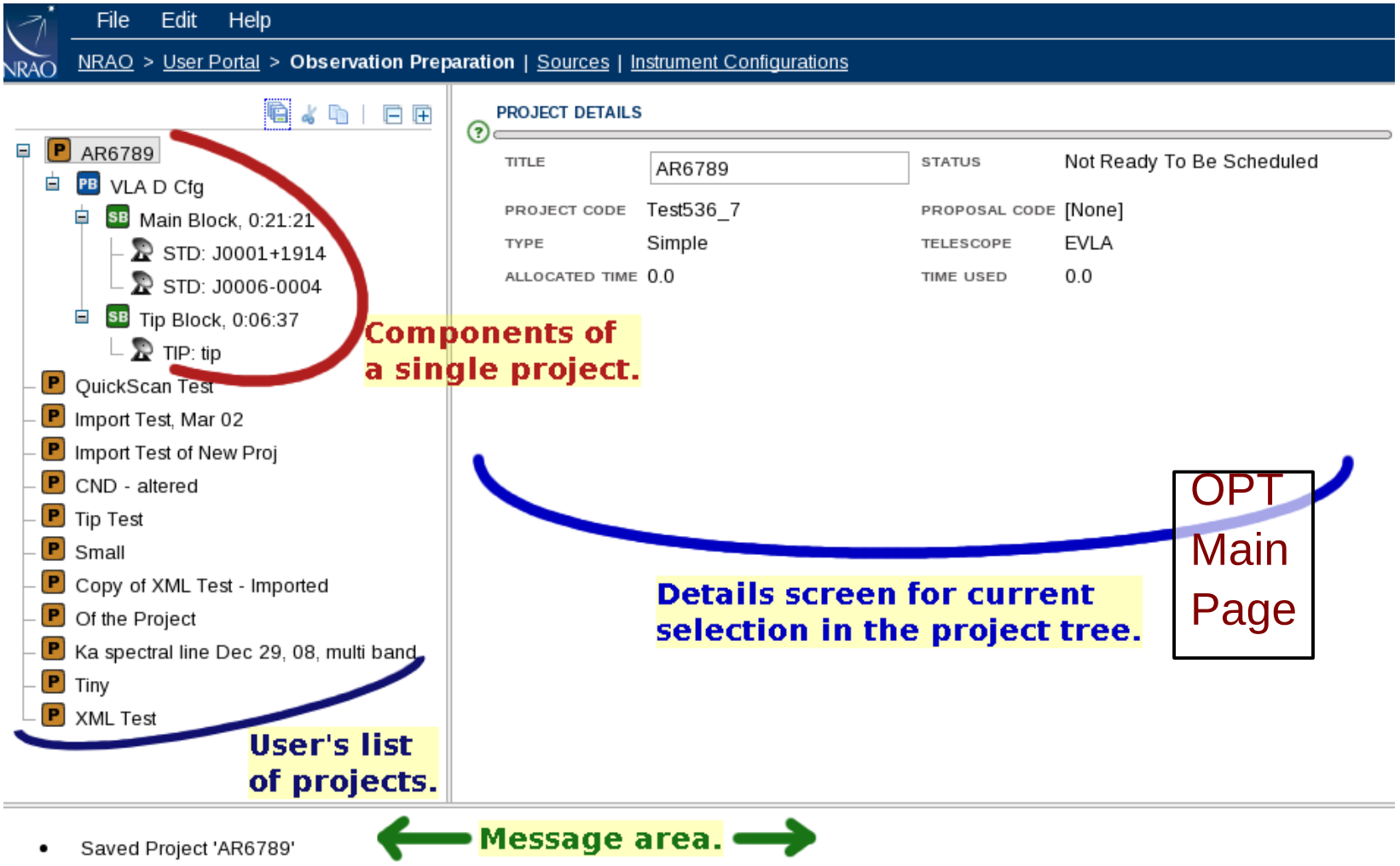


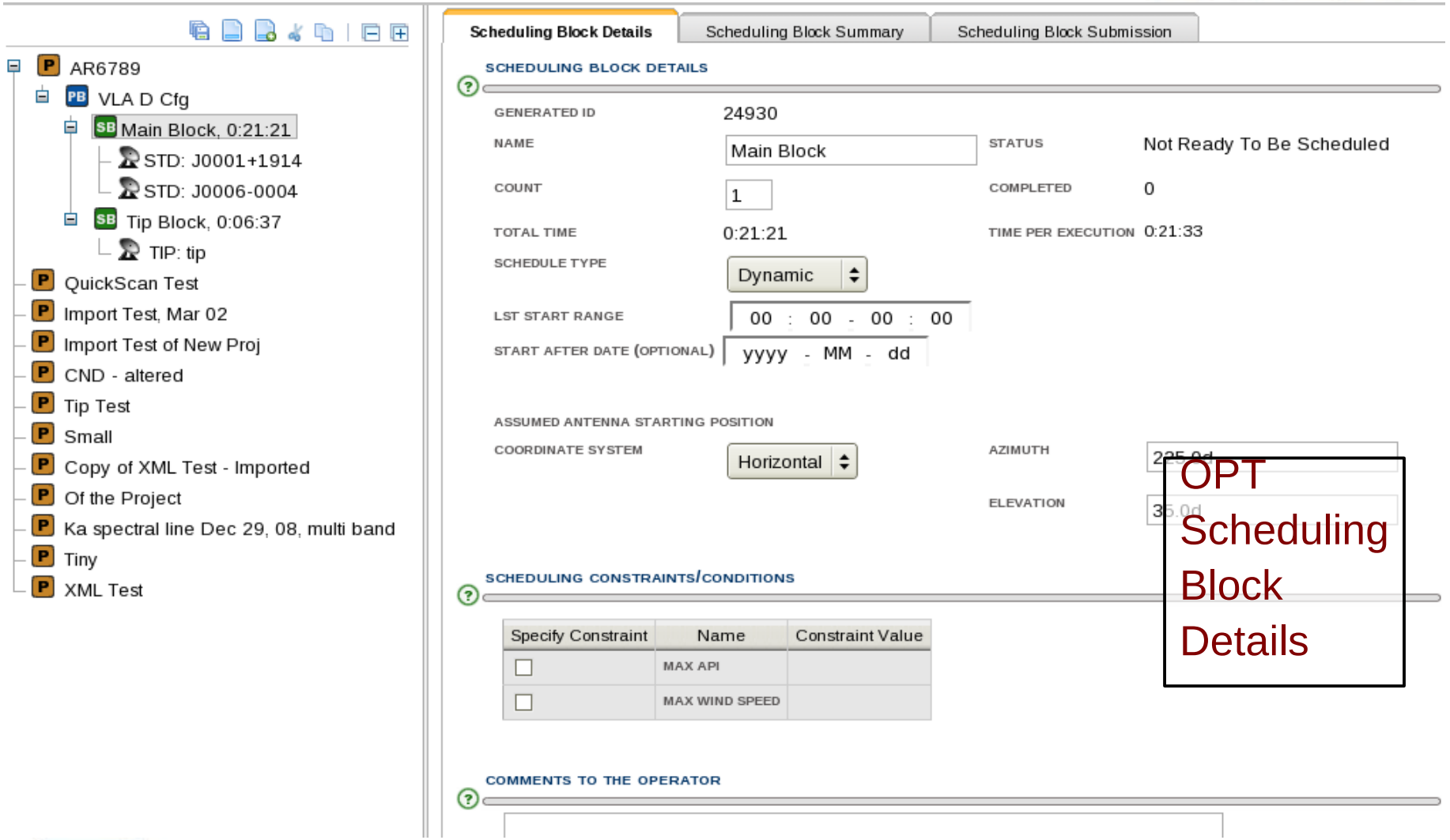
Frequency:878MHz

RCT WIDAR Configuration

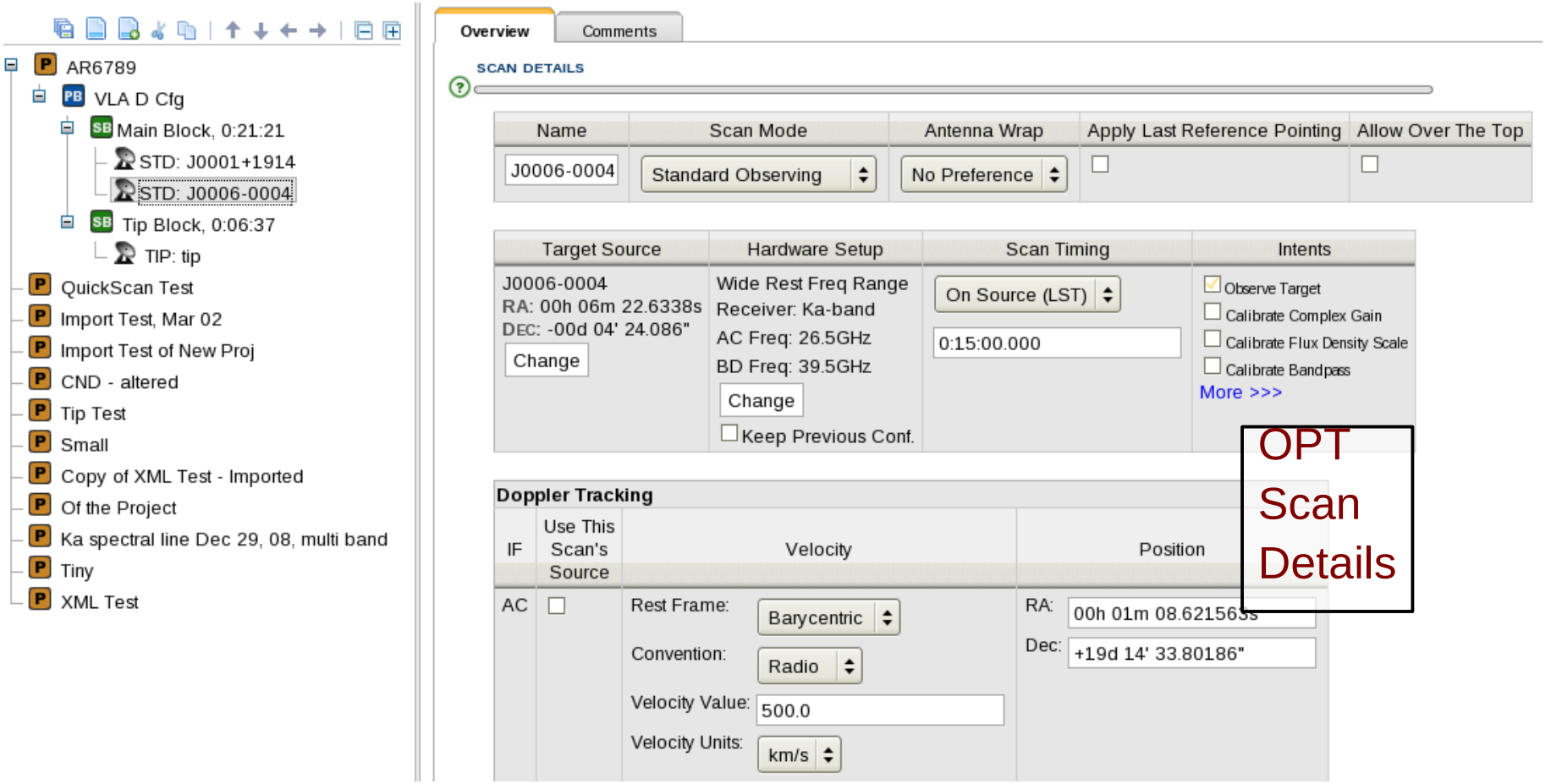
Observation Preparation Tool

- Available now to observers. Cannot use JObserve for extended tuning ranges of EVLA receivers.
- Has received some positive comments from first users.
  - Still has long way to go to be a finished product.
    - Original requirements and current users' wish-list as guides.
    - Usability will also be addressed.
      - Too much mouse clicking needed for frequent operations.
- The only feature changes *required* for OSRO / RSRO will be in area of Doppler tracking.
  - Most of the WIDAR variability is encapsulated in RCT and in the model.


File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
AR6789
VLA D Cfg
Main Block, 0:21:21
STD: J0001+1914
STD: J0006-0004
Tip Block, 0:06:37
TIP: tip
QuickScan Test
Import Test, Mar 02
Import Test of New Proj
CND - altered
Tip Test
Small
Copy of XML Test - Imported
Of the Project
Ka spectral line Dec 29, 08, multi band
Tiny
XML Test
Components of a single project.
User's list of projects.
PROJECT DETAILS
TITLE AR6789
STATUS Not Ready To Be Scheduled
PROJECT CODE Test536_7
PROPOSAL CODE [None]
TYPE Simple
TELESCOPE EVLA
ALLOCATED TIME 0.0
TIME USED 0.0
Details screen for current selection in the project tree.
OPT Main Page
Saved Project 'AR6789'
Message area.



OPT Scheduling Block Details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Tip Test
Small
Copy of XML Test - Imported
Of the Project
Ka spectral line Dec 29, 08, multi band
Tiny
XML Test
Overview
Comments
SCAN DETAILS
Name
Scan Mode
Antenna Wrap
Apply Last Reference Pointing
Allow Over The Top
J0006-0004
Standard Observing
No Preference
Target Source
Hardware Setup
Scan Timing
Intents
J0006-0004
RA: 00h 06m 22.6338s
DEC: -00d 04' 24.086"
Change
Wide Rest Freq Range
Receiver: Ka-band
AC Freq: 26.5GHz
BD Freq: 39.5GHz
Change
Keep Previous Conf.
On Source (LST)
0:15:00.000
Observe Target
Calibrate Complex Gain
Calibrate Flux Density Scale
Calibrate Bandpass
More >>>
Doppler Tracking
IF
Use This Scan's Source
Velocity
Position
AC
Rest Frame:
Barycentric
Convention:
Radio
Velocity Value:
500.0
Velocity Units:
km/s
RA:
00h 01m 08.621563s
Dec:
+19d 14' 33.80186"
OPT Scan Details

[Brief demonstration of OPT+ here.]

Links

- Observation Preparation Tool (OPT)
  - Test: https://webtest.aoc.nrao.edu/opt
  - Production: https://e2e.nrao.edu/opt
- Source Catalog Tool (SCT)
  - Test: https://webtest.aoc.nrao.edu/sct
  - Production: https://e2e.nrao.edu/sct

End of Presentation